Trend Study 2-30-01

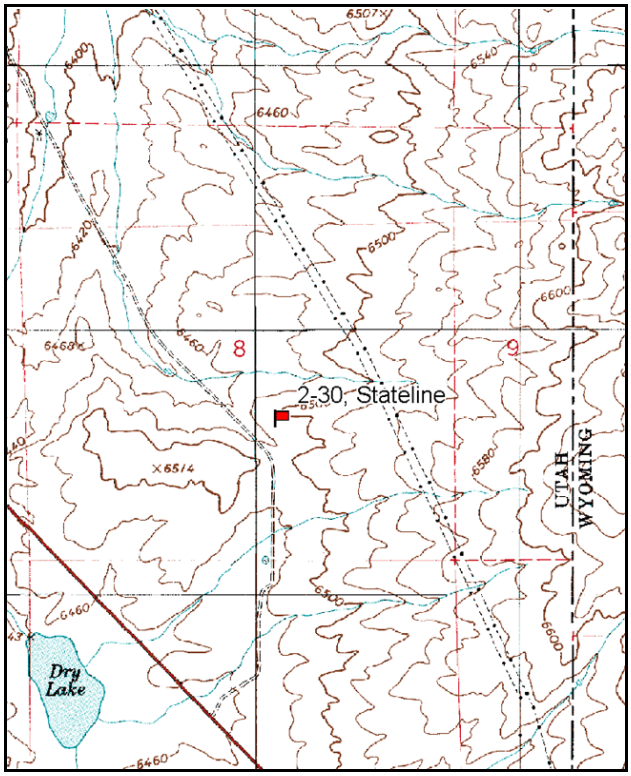
Study site name: State Line . Vegetation type: Big Sagebrush .

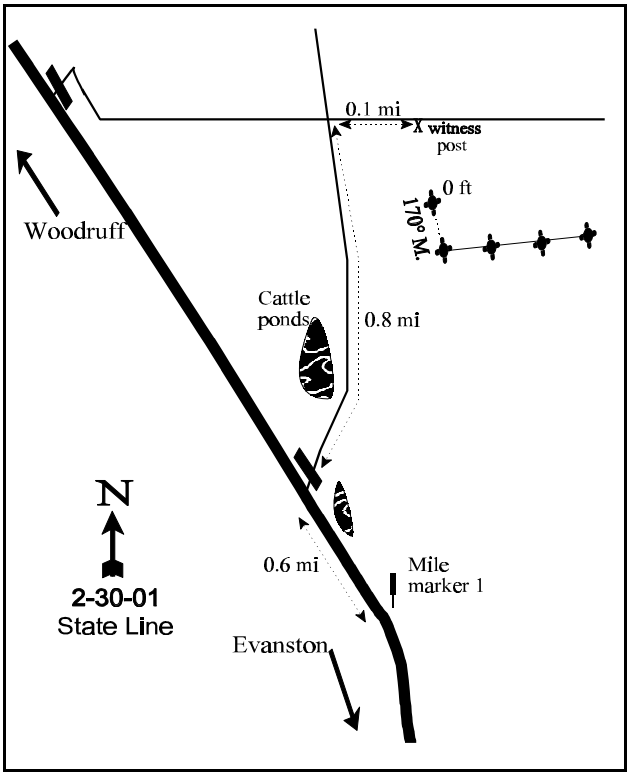
Compass bearing: frequency baseline 170 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (71ft), line 3 (59ft), line 4 (34ft).

LOCATION DESCRIPTION

From the Utah/Wyoming border, proceed north on Highway 16 for 0.6 miles past mile marker 1. Turn right proceeding through gate, and travel 0.8 miles north to an intersection in a wash. Turn right, and drive 0.1 miles east to a witness post. Walk ten paces at a bearing of 170 degrees magnetic. The 0-foot stake is wired with a browse tag # 7991





Map Name: Neponset Reservoir NE Diagrammatic Sketch

Township 8N , Range 8E , Section 8 UTM 4587628 N, 495083 E

DISCUSSION

Trend Study No. 2-30

The State Line trend study is located near the Utah-Wyoming border east and south of Woodruff on gentle to nearly level terrain at an elevation of 6,490 feet. This area is dominated by Wyoming big sagebrush which provides more than 70% of the total plant cover at the site. The area is used by deer, antelope, and rabbits. Quadrat frequency of deer pellet groups was moderately high at 26% in 1996, declining to 13% by 2001. A pellet group transect read along the study site baseline in 2001 estimated 31 deer, 7 elk, and 12 cow days use/acre (76 ddu/ha, 17 edu/ha, and 29 cdu/ha). Antelope also use the area. Deer and antelope pellet groups were combined due to their similarity in appearance. About 90% of the deer/antelope pellet groups encountered appear to be from winter use with 10% from spring use. A 3-point antler shed was found on the site during the 2001 reading. Cattle were in the area during the spring and early summer of 2001. Sage grouse also use the area, and some sage grouse droppings were encountered in quadrats.

Soil is classified as "Neponset Sandy Loam," a moderately deep, well drained soil residually formed from sandstone and siltstone. Total soil depth ranges from 20 to 40 inches and is moderately to strongly alkaline and calcareous throughout. Neponset soil is moderately permeable to water and has low available water capacity. It is moderately susceptible to water erosion and highly susceptible to wind erosion and dune formation (Campbell and Lacey 1982). Soil on the site varies slightly from this description. It has a clay loam texture and a soil reaction that is slightly alkaline (7.8 pH). This value is near the borderline of being moderately alkaline. Effective rooting depth (see methods) is slightly more than 10 inches. Soil temperature is low, averaging only 55°F at a depth of 9 inches. The surface is nearly free of rock cover with a calcareous layer about 10 inches below the surface. Current or actual soil condition is fair. Although moderately high amounts of bare ground are exposed, terrain is nearly level so water erosion is not excessive. Soil pedestalling is evident around plants and the presence of flow patterns, rills, and soil movement indicate continual erosion is occurring. A dense stand of Wyoming big sagebrush and the associated cryptogams under their crowns help stabilize the area and prevent formation of dunes and "blowouts." The erosion condition class was determined to be slight in 2001.

Vegetatively, the landscape is dominated by Wyoming big sagebrush which currently (‘01) provides 90% of the browse cover and 67% of the total vegetative cover. Its density has fluctuated between 8,066 plants/acre in 1990 to 6,500 in 1996, and 6,700 in 2001. The decline in density is largely the result of changes in the number of young plants which accounted for 15% of the population density in 1984 and 17% in 1990. Due to drought, seedlings and young were scarce in 1996 and 2001. Few mature plants were producing seed in 1996. However, seed production was better in 2001. Annual leader growth was relatively poor in 2001, averaging only 1inch. Utilization of sagebrush has been consistently moderate to heavy since 1990. Vigor has remained normal on most plants, and percent decadence has steadily declined from 39% in 1990 to 21% in 2001.

Other fairly common browse species include Gardner saltbush (*Atriplex gardneri falcata*) and stickyleaf low rabbitbrush. Gardner saltbush is a very small, low-growing saltbush that is strongly rhizomatous and sprouts profusely. It is an important browse, especially on disturbed sites where it seems to perform exceptionally well. The density plot data from 1984 and 1990 almost certainly present a biased picture of this species importance with 3,866 and 5,532 plants/acre estimated respectively. The much larger sample used in 1996 and 2001 gives a better picture of the species true density (1,840 plants/acre). Narrowleaf low rabbitbrush has a mostly mature population of around 2,000 plants/acre. The stand is mostly mature with few seedlings or young.

Herbaceous composition produces little forage and lacks diversity. Grass production is poor and many acres are required to support a single AUM. Total grass cover was estimated at only 5% in 1996 and 6% in 2001.

The only common grass is Sandberg bluegrass which accounted for 87% of the grass cover in 1996 and 78% in 2001. Forbs are even less productive and few species have any significant value. The only fairly common species include hoods phlox and stemless goldenweed (*Haplopappus acaulis*).

1984 APPARENT TREND ASSESSMENT

Soil and vegetation trend are closely related and interdependent factors. Currently, both appear stable but any significant disturbance could bring considerable change. This soil is highly susceptible to wind erosion and depends on the dominant sagebrush for stabilization. Disturbed sites blow easily and are favorable places for saltbush and stemless hymenoxys to become established.

1990 TREND ASSESSMENT

The Wyoming big sagebrush on the State Line site displays a stable trend. It is moderately to heavily hedged with fair vigor and a well-balanced age class structure. The herbaceous understory is in poor condition on this lightly grazed site. Nested frequency of western wheatgrass declined significantly while the dominant Sandberg bluegrass remained stable. As with the previous sites, the percentage of litter cover is lower, and the amount of bare soil increased. However, basal vegetation cover has increased and soil erosion is not excessive due to the mild slope.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

1996 TREND ASSESSMENT

Ground cover characteristics have remained similar to 1990, indicating a stable soil trend. However, conditions are still poor due to the abundance of unprotected bare ground. Trend for Wyoming big sagebrush is stable although it could decline in the near future without an improvement in reproduction. The number of seedlings and young plants have declined since 1990, but the number of mature and decadent sagebrush have remained similar. Total density has declined from 8,066 plants/acre in 1990 to 6,500 plants/acre in 1996. Some of the difference in density is due to the much larger sample used in 1996. Dead sagebrush, first included in 1996, number 800 plants/acre. Considering the large population, this would not suggest a major die-off. It is indicative that the larger sample used in 1996 gives a more accurate estimate of the actual Wyoming big sagebrush density. There is less heavy use of the sagebrush, vigor has improved, and percent decadency has declined slightly (38% to 32%). However, 26% (540 plants/acre) of the decadent sagebrush sampled were classified as dying (>50% crown death). If reproduction does not improve, the population will likely decline slightly. Grasses and forbs are severely lacking on this site and sum of nested frequency for perennial grasses and forbs declined slightly. Sum of nested frequency for western wheatgrass declined significantly while that of the dominant Sandberg bluegrass remained stable. Overall, trend for the herbaceous understory is considered stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2001 TREND ASSESSMENT

Trend for soil is stable but in poor condition. Ground cover characteristics are similar to 1996 estimates. Percent cover of bare ground continues to be high with inadequate herbaceous cover. The main factor holding the soil in place is the abundance of cryptogamic crusts under sagebrush crowns. All shrubs are pedestalled and there are signs of soil movement in the shrub interspaces. Due in part to the gentle terrain, the erosion condition class is classified as slight. Trend for Wyoming big sagebrush is stable. Density has remained similar. Utilization is moderate, vigor normal on most plants, and percent decadence has declined to 21%. Seed production is good this year, while annual leader growth appeared to be poor averaging only 1 inch. Reproduction is poor with few seedlings and young encountered. In addition, 38% (540 plants/acre) of the decadent plants sampled were classified as dying. The population will eventually decline if reproduction does not improve. A similar number of plants were classified as dying in 1996, yet the population did not decline. In fact, it appears that some of the decadent plants sampled in 1996 regained their vigor and are now classified as mature. It also looks like many of the sagebrush that were classified as dying in 1996 have not died yet, but continue to display >50% crown death. Trend for the herbaceous understory is mixed. Sum of nested frequency for perennial grasses increased with frequency of perennial forbs declining. Nested frequency of western wheatgrass increased significantly as the frequency of the dominant grass, Sandberg bluegrass, remained similar to 1996. The dominant forb, hoods phlox, declined significantly. Since grasses provide two-thirds of the herbaceous cover, the herbaceous trend is considered stable at this time.

TREND ASSESSMENT
soil - stable but in poor condition (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 02 , Study no: 30

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron smithii	$_{c}$140	$_{b}$94	$_{a}$-	$_{b}$96	56	39	-	42	-	.87
G	Agropyron spicatum	-	-	51	-	-	-	22	-	.36	-
G	Oryzopsis hymenoides	5	9	8	10	3	3	4	5	.19	.51
G	Poa secunda	235	248	232	245	90	84	89	91	4.11	4.94
G	Sitanion hystrix	$_{a}$-	$_{ab}$9	$_{b}$23	$_{a}$-	-	4	10	-	.07	-
G	Stipa comata	$_{b}$39	$_{a}$-	$_{a}$-	$_{a}$-	19	-	-	-	-	-
Total for Annual Grasses		0	0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		419	360	314	351	168	130	125	138	4.73	6.32
Total for Grasses		419	360	314	351	168	130	125	138	4.73	6.32
F	Alyssum alyssoides (a)	-	-	$_{a}$2	$_{b}$211	-	-	1	79	.00	.69
F	Antennaria rosea	6	9	2	1	3	3	1	1	.15	.00
F	Arabis spp.	$_{b}$19	$_{a}$-	$_{a}$-	$_{a}$3	9	-	-	1	-	.00
F	Astragalus convallarius	$_{b}$20	$_{a}$6	$_{a}$2	$_{ab}$9	9	2	1	5	.00	.07
F	Astragalus utahensis	-	2	1	1	-	2	1	1	.00	.00

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Cymopterus spp.	-	-	-	3	-	-	-	1	-	.00
F	Draba spp. (a)	-	-	3	3	-	-	1	1	.00	.03
F	Eriogonum caespitosum	-	2	-	-	-	2	-	-	-	-
F	Eriogonum cernuum (a)	-	-	-	1	-	-	-	1	-	.00
F	Erigeron pumilus	3	5	-	-	1	2	-	-	-	-
F	Haplopappus acaulis	$_{b}$69	$_{b}$64	$_{a}$30	$_{a}$15	27	27	12	6	.74	.54
F	Phlox hoodii	$_{ab}$125	$_{ab}$128	$_{b}$133	$_{a}$89	57	58	60	47	2.08	1.88
F	Phlox longifolia	$_{a}$3	$_{ab}$25	$_{b}$39	$_{b}$29	1	10	17	10	.11	.12
F	Trifolium spp.	7	4	-	2	3	1	-	1	-	.00
F	Unknown forb-perennial	1	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	0	5	215	0	0	2	81	0.00	0.73
Total for Perennial Forbs		253	245	207	152	111	107	92	73	3.09	2.64
Total for Forbs		253	245	212	367	111	107	94	154	3.10	3.37

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 02 , Study no: 30

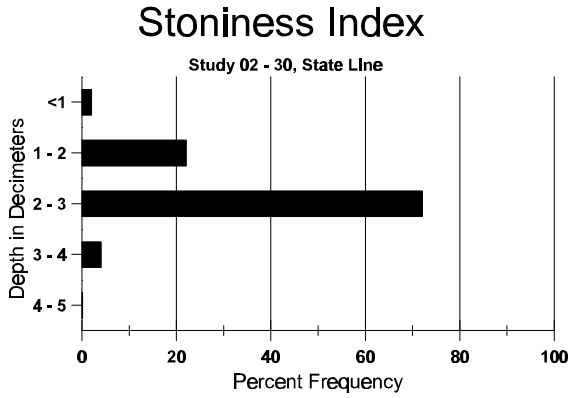
Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia tridentata wyomingensis	98	96	23.38	25.17
B	Atriplex gardneri falcata	14	15	.56	.27
B	Chrysothamnus viscidiflorus viscidiflorus	56	51	1.41	1.91
B	Leptodactylon pungens	0	3	-	.53
B	Opuntia spp.	9	12	.21	.21
B	Tetradymia canescens	6	4	.01	.00
Total for Browse		183	181	25.57	28.10

BASIC COVER --
Herd unit 02 , Study no: 30

Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	311	330	6.25	12.00	31.88	39.17
Rock	58	21	.75	.25	.33	.11
Pavement	141	106	7.00	7.00	1.16	1.01
Litter	386	363	42.75	24.00	26.83	28.42
Cryptogams	242	262	5.50	14.00	8.70	12.45
Bare Ground	341	319	37.75	42.75	39.54	42.63

SOIL ANALYSIS DATA --
Herd Unit 02, Study no: 30, State Line

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
10.4	54.8 (9.3)	7.8	41.9	28.1	30.0	2.0	8.4	99.2	.8



PELLET GROUP FREQUENCY --
Herd unit 02 , Study no: 30

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Rabbit	4	1	-	-
Grouse	-	5	-	-
Elk	-	-	87	7 (17)
Deer	26	13	400	31 (76)
Cattle	-	1	139	12 (29)
Antelope	1	1	-	-

BROWSE CHARACTERISTICS --
Herd unit 02 , Study no: 30

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	84	23	-	-	-	-	-	-	-	-	23	-	-	-	1533			23
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	84	12	5	-	-	-	-	-	-	-	17	-	-	-	1133			17
	90	18	-	-	2	-	1	-	-	-	20	1	-	-	1400			21
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	10	29	13	-	-	-	-	-	-	52	-	-	-	3466	14	19	52
	90	4	28	22	-	-	-	-	-	-	45	1	8	-	3600	15	16	54
	96	103	105	8	-	-	-	-	-	-	216	-	-	-	4320	15	31	216
	01	62	152	35	-	10	4	-	-	-	261	2	-	-	5260	18	30	263
D	84	9	17	18	-	-	-	-	-	-	41	-	3	-	2933			44
	90	1	23	22	-	-	-	-	-	-	31	-	5	10	3066			46
	96	31	44	29	-	-	-	-	-	-	77	-	-	27	2080			104
	01	28	30	10	-	2	-	1	-	-	39	5	-	27	1420			71
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	800			40
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	700			35

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	45%	27%	03%	+ 7%
'90	42%	37%	19%	-19%
'96	46%	11%	08%	+ 3%
'01	58%	15%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	7532	Dec:		39%
'90	8066			38%
'96	6500			32%
'01	6700			21%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Atriplex gardneri falcata																		
S	84	81	-	-	-	-	-	-	-	-	81	-	-	-	5400			81
	90	53	-	-	-	-	-	1	-	-	54	-	-	-	3600			54
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	24	9	-	-	-	-	-	-	-	24	9	-	-	2200			33
	90	63	3	-	1	-	-	-	-	-	67	-	-	-	4466			67
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	2	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	12	13	-	-	-	-	-	-	-	18	7	-	-	1666	7	11	25
	90	10	1	3	1	-	1	-	-	-	16	-	-	-	1066	5	7	16
	96	89	-	-	1	-	-	-	-	-	90	-	-	-	1800	3	7	90
	01	18	10	20	2	-	-	-	-	-	48	2	-	-	1000	4	7	50
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	38%	00%	00%	+30%
'90	05%	05%	00%	-67%
'96	00%	00%	00%	-42%
'01	23%	38%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	3866	Dec:		0%
'90	5532			0%
'96	1840			2%
'01	1060			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	1	-	-	1	-	-	-	-	-	2	-	-	-	133			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	24	-	-	-	-	-	-	-	-	24	-	-	-	1600	11	14	24
	90	10	5	1	-	-	-	-	-	-	15	-	1	-	1066	6	10	16
	96	71	-	-	12	-	-	-	-	-	83	-	-	-	1660	8	13	83
	01	91	-	-	1	-	-	-	-	-	90	2	-	-	1840	8	12	92
D	84	1	-	-	-	-	-	-	-	-	-	-	1	-	66			1
	90	6	7	-	-	-	-	-	-	-	12	-	1	-	866			13
	96	16	-	-	2	-	-	-	-	-	8	-	-	10	360			18
	01	7	-	-	-	-	-	-	-	-	3	-	-	4	140			7
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	04%	+16%
'90	39%	03%	06%	- 2%
'96	00%	00%	10%	- 1%
'01	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	1732	Dec:	4%
	'90	2065		42%
	'96	2020		18%
	'01	2000		7%

Eriogonum microthecum																		
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66	1	2	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	66	Dec:	-
	'90	0		-
	'96	0		-
	'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	10	-	-	-	-	-	-	-	-	10	-	-	-	200	4	9	10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'84	00%	00%	00%
'90	00%	00%	00%
'96	00%	00%	00%
'01	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	0		-
	'01	220		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	1	-	-	-	-	-	2	-	-	-	133			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	8	-	-	-	-	-	-	-	-	8	-	-	-	533			8
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	84	9	-	-	-	-	-	-	-	-	9	-	-	-	600	5	13	9
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133	4	6	2
	96	17	-	-	-	-	-	-	-	-	17	-	-	-	340	3	11	17
	01	17	-	-	-	-	-	-	-	-	16	1	-	-	340	3	7	17
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	4	-	-	-	-	-	-	-	-	2	-	1	1	266			4
	96	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3
	01	4	-	-	-	-	-	-	-	-	3	-	-	1	80			4
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+36%
'90	00%	00%	14%	-46%
'96	00%	00%	04%	-12%
'01	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	600	Dec:	0%
	'90	932		29%
	'96	500		12%
	'01	440		18%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
M	84	-	1	-	-	-	-	-	-	-	1	-	-	-	66	4	5	1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	10	-	-	-	-	-	-	-	-	10	-	-	-	200	4	9	10
	01	3	1	-	-	-	-	-	-	-	4	-	-	-	80	7	12	4
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	5	-	3	-	-	-	-	-	-	6	-	-	2	160			8
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	100%	00%	00%	
'90	00%	00%	00%	
'96	00%	17%	11%	-78%
'01	25%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	66	Dec:	0%
	'90	0		0%
	'96	360		44%
	'01	80		0%